1. HTML Basics

1.1 Document Structure

HTML documents have a standard structure that ensures proper rendering by browsers. A basic HTML template looks like this:

```html
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Page Title</title>
  </head>
  <body>
    <!-- Main content goes here -->
  </body>
</html>
```

- `<!DOCTYPE html>`: Declares the document as HTML5.
- `<html>`: Root element of the HTML document.
- `<head>`: Contains metadata, such as the title and character encoding.
- `<body>`: Contains the content visible to users.

1.2 Common Elements

- **Headings (**`<h1>`** to **`<h6>`**)**

  - Define a document's hierarchy.
  - Example:

    ```html
    <h1>Main Heading</h1>
    <h2>Subheading</h2>
    ```

- **Paragraphs (**`<p>`**)**

  - Represent blocks of text.
  - Example:

    ```html
    <p>This is a paragraph.</p>
    ```

- **Links (**`<a>`**)**

  - Used to create hyperlinks.
  - Attributes:

- href: The URL the link points to.
- target: Determines where the link opens (e.g., _blank for a new tab).
  - Example:

```
<a href="https://example.com" target="_blank">Visit Example</a>
```

- **Attributes**

  - Provide additional information about an element.
  - Example:

```
<p class="intro" id="main">Hello, world!</p>
```

2. Structuring Content

2.1 Text Elements

Text elements structure and format content on a web page:

- **Inline Text Elements:**
  - **Bold (**`<strong>`**)**: Indicates important text.
  - **Italic (**`<em>`**)**: Indicates emphasized text.
  - **Span (**`<span>`**)**: Used for inline styling or grouping.

Example:

```
<p>This is <strong>important</strong> and <em>emphasized</em> text.</p>
```

2.2 Semantic Tags

Semantic HTML improves accessibility and search engine optimization (SEO):

- **Examples:**
  - `<header>`: Introductory content or navigation.
  - `<main>`: The main content of the page.
  - `<footer>`: Footer information.
  - `<article>`: Self-contained content.
  - `<section>`: Groups related content.

Example:

```
<header>
  <h1>Welcome to My Website</h1>
</header>
```

```
<main>
  <article>
    <h2>Article Title</h2>
    <p>This is an article.</p>
  </article>
</main>
<footer>
  <p>&copy; 2025 My Website</p>
</footer>
```

2.3 Lists

Lists organize content into bullets or numbers:

- **Unordered Lists (**`<ul>`**)**

    - Bullet points.
    - Example:

      ```
      <ul>
        <li>Item 1</li>
        <li>Item 2</li>
      </ul>
      ```

- **Ordered Lists (**`<ol>`**)**

    - Numbered items.
    - Example:

      ```
      <ol>
        <li>Step 1</li>
        <li>Step 2</li>
      </ol>
      ```

- **Nested Lists**

    - Lists within lists.
    - Example:

      ```
      <ul>
        <li>
          Item 1
          <ul>
            <li>Subitem 1</li>
          </ul>
        </li>
      </ul>
      ```

2.4 Links

Links connect users to other web pages or sections within the same page:

- **External Links:** Point to an external webpage using an absolute URL.

```
<a href="https://example.com">Visit Example</a>
```

- **Internal Links:** Navigate within the same site using a relative URL.

```
<a href="/about.html">About Us</a>
```

- **Anchor Links:** Jump to a specific section within a page.

```
<a href="#section-id">Go to Section</a>
```

3. Images

3.1 Adding Images

The `<img>` tag embeds images into a webpage.

- **Attributes:**
    - `src`: Path to the image file.
    - `alt`: Text for accessibility.
    - `width` and `height`: Dimensions of the image.

Example:

```
<img src="profile.jpg" alt="Profile picture" width="300" />
```

3.2 Formatting and Optimizing Images

- **Use Appropriate Formats:**

    - **JPEG**: Best for photographs.
    - **PNG**: Supports transparency.
    - **SVG**: Scalable vector graphics.
    - **WebP**: High compression with good quality.

- **Responsive Images:**

○ Use the `srcset` attribute to provide multiple image sizes.

Example:

```
<img
  src="small.jpg"
  srcset="large.jpg 1024w, medium.jpg 768w"
  sizes="(max-width: 768px) 100vw"
  alt="Responsive example"
/>
```

- **CSS for Responsive Design:**

```
img {
  max-width: 100%;
  height: auto;
}
```

Learning Activities

Activity 1: Hands-on Coding Practice

1. Create an HTML document with:
   - A title and heading.
   - A paragraph of text.
   - A list (ordered or unordered).
   - At least one image with optimized attributes.
   - Semantic elements such as `<header>` and `<main>`.

Activity 2: Recitation

- Discuss the purpose and use of semantic HTML.
- Explain the difference between block and inline elements.
- Identify best practices for adding and optimizing images.

Activity 3: Small Exercises

- Add an internal link using `<a href="#section-id">`.
- Practice nesting lists within other lists.
- Experiment with responsive images using `srcset`.

Deliverable: Mini-Project

Project Title: Create a Personal Webpage

Description: Develop a basic HTML webpage that introduces yourself. The page must include:

- **Page Structure:**

    - A proper HTML document structure.
    - Semantic elements for organization.

- **Content:**

    - A heading and a paragraph about yourself.
    - A list of hobbies (unordered) and goals (ordered).
    - At least one image, optimized and responsive.
    - An internal link to a specific section on the page.

Submission:

- Submit the HTML file at the end of the discussion.
- Ensure proper formatting, indentation, and use of semantic HTML.